

**CAST LEAF
DEVELOPMENT
PROGRAM**

September 25, 1991

2021307234

Cast Leaf Program

Objectives

1. Implement a Cast Leaf process that will provide flexibility in meeting capacity needs for individual sheet types.
2. Optimize the current RCB process for sheet physical properties, production capacity, and environmental goals.
3. Support R&D programs requiring non-standard sheet.

OBJECTIVE 1

Implement a cast leaf process that will provide flexibility in meeting capacity needs for individual sheet types.

Status & Background

The reconstituted tobacco capacity of PM is rapidly becoming insufficient to meet future growth.

Strategies

1. **Develop the business plan for meeting sheet requirements**, to support a decision for timing and site selection of a Cast Leaf Facility.
2. **Develop Cast Leaf product**, formulated from available feedstocks, with sheet physicals, burn characteristics, and subjectives comparable to RL (Cast Leaf) and RCB (New BL).
3. **Define the Cast Leaf process** with optimum process and equipment requirements defined for the selected binder system.

Cast Leaf Program

Strategy 1

Develop the business plan for meeting sheet requirements, to support a decision for timing and site selection of a Cast Leaf Facility.

Tactics

1.1 Develop PM USA/Europe material balance for OTM and reconstituted sheet needs.

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|-------|--|------------|
| 1.1.1 | Identify source and verify accuracy of PM USA forecasted requirements of sheet needs and OTM availability. | Complete |
| 1.1.2 | Identify source and verify accuracy of European forecasted requirements of sheet needs and OTM availability. | Complete |
| 1.1.3 | Develop material balance model and initiate protocol for routine updates. | 4th Qtr 91 |
| 1.1.4 | Obtain commitments for feedstock availability for Cast Leaf. | 1st Qtr 92 |

1.2 Establish source and capacity of suppliers of reconstituted sheet.

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|-------|---|------------|
| 1.2.1 | Define capacity of BL plant and develop strategy for capacity increase, including capital requirements and timing. | 4th Qtr 91 |
| 1.2.2 | Define capacity for Park 500 and develop strategy for capacity increase, including capital requirements and timing. | 4th Qtr 91 |
| 1.2.3 | Establish availability of sheet from alternate suppliers. Qualify for use for PM USA and PME. | 4th Qtr 91 |

- Venezuela RCB
- LTR RLTC
- American RLTC
- Schweitzer RLTC

Strategy 1

1.3 Conduct economic analysis of options for meeting sheet requirements.

1.3.1 Develop economic model identifying least cost alternative for meeting sheet requirements.

Complete

1.3.2 Utilize economic model to develop decision matrix for selection of alternative suppliers of sheet and/or implementation of a Cast Leaf process.

4th Qtr 91

1.3.3 Confirm results of economic model through Operations Analysis.

1st Qtr 92

Strategy 2

Develop a Cast Leaf product, formulated from available feedstocks, with sheet physicals, burn characteristics, and subjectives comparable to RL (Cast Leaf) and RCB (New BL).

Tactics

- 2.1 Construct and operate a cast leaf laboratory to generate sheet materials for evaluations in machine made cigarettes.
- 2.2 Selection of feedstock and binder system.
 - 2.2.1 Conduct screening of binder systems based on film forming characteristics, physicals and subjective acceptability. Complete
 - 2.2.2 Optimize Cast Leaf Product through studies to establish binder characteristics impacting sheet physicals and interactive affects between binder, solvent, tobacco and additives. 2nd Qtr 92
 - 2.2.3 Establish QA methodology for qualification of binder and raw materials. 1st Qtr 93
- 2.3 Development of flavor additives to achieve subjective response. 2nd Qtr 92
 - 2.3.1 Establish subjective target for Cast Leaf.
 - 2.3.2 Establish methodology for mapping subjective response as function of binder, tobacco and flavor additives.
- 2.4 Qualification of Cast Leaf product for both PM USA and European blends. 1st Qtr 93

Strategy 3

Define the Cast Leaf process with optimum process and equipment requirements defined for the selected binder system.

Tactics

3.1 Install Cast Leaf pilot plant to conduct process development for the Cast Leaf product.

3.1.1 Install, startup and debug pilot plant operation. 4th Qtr 91

3.1.2 Qualify process for production of pilot RCB with subjective equivalence to standard RCB production. 1st Qtr 92

3.1.3 Develop and optimize process for production of New BL. Subjectively qualify New BL versus standard process RCB. 1st Qtr 92

3.1.4 Develop and optimize process for production of Cast Leaf. Subjectively qualify Cast Leaf for PM USA and European blends. 2nd Qtr 92

3.2 Define technical design criteria for Commercial Plant. 3rd Qtr 92

3.3 Complete Process Development and transfer Cast Leaf process technology to Engineering for commercial implementation. 1st Qtr 93

OBJECTIVE 2

Optimize the current RCB process for sheet physical properties, production capacity, and environmental goals.

Status & Background

The survivability of RCB through cigarette making is lower than RL and this differential sheet quality should be reduced. The BL process also uses washed burley stems and the extract from the stem washing operation should be reduced to keep within the increasingly stringent effluent standards.

Strategy 1

Utilize the Cast Leaf pilot plant to develop new technology applicable to the present RCB process to improve sheet quality without changing RCB subjective character or delivery.

Tactics

- 1.1 Quantify the effect of tobacco grind size on RCB quality and production rate.
Develop strategy to determine capacity increase potential jointly with engineering and operations.
- 2nd Qtr 1992
- 1.2 Reduce the air content of RCB slurry to reduce the sheet pinholes which cause smaller sieve fractions when the sheet is cut into filler.
- 1992

Strategy 2

Reduce the environmental impact of the RCB process.

Tactics

- 2.1 Evaluate the impact of eliminating Burley Stem washing on RCB.
- 4th Qtr 1991

OBJECTIVE 3

Support R&D programs requiring non-standard Cast Leaf.

Status & Background

We have no facility to explore the characteristics of new cast products until we complete the pilot plant.

Strategy

Generate sufficient quantities of novel Cast Leaf products to establish their potential in machine made cigarettes.

-1992

Tactics

Provide cast products of novel composition to support programs requiring special cigarette properties (burn rate control, tar delivery, feedstocks, humectants, LBA, low sidestream, etc.).

RESOURCE ALLOCATION
CAST LEAF PROCESS

	<u>1991</u>	<u>1992</u>	<u>1993</u>	<u>1994</u>	<u>1995</u>
Analytical Research	2.0	2.0	2.5	2.5	2.5
Biochemical Research					
Computer Applications					
Chemical Research	-	1.0	1.0	-	-
Cigarette Development					
Cigarette Technology					
Cigarette Testing Services	0.5	1.0	1.0	1.0	1.0
Development Engineering	0.8	0.8	0.5	0.5	0.5
Flavor Development	0.7	0.5	0.5	0.1	0.1
Product Evaluation	0	0.3	0.3	0.2	0.1
Physical Research	0.3	0.3	0.2	0.1	0
Technology Assessment	0.4	0.5	0.6	0.8	0.8
Technical Information Services					
Tobacco Fundamentals	3.0	3.0	3.0	3.0	3.0
Reconstituted Tobacco Division	12.0	12.0	12.0	12.0	12.0
Tobacco Process & Fabrication	1.0	0.8	0.8	0.8	0.8
Total	20.7	22.2	22.4	21.0	20.8